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Amendments to the Specification:

1. Please **replace** paragraph **[0037]** with the following amended paragraph:

The intuition for defining a linear relationship between a foreground and a background color is illustrated in Figures 6-9. Figure 6 illustrates a document image 600 with the characters "text" set forth therein, which is defined using green and red color channels. Figure 7 illustrates the section 602 of the document image 600 shown in Figure 6. Figure 8 illustrates a graph of the green color channel <u>603</u> [[604]] and the red color channel <u>605</u> [[606]] as they change along the column axis of the section 602 of the document image 600 shown in Figure 7. Figure 9 illustrates a graph that plots values of the green color channel against the values of red color channel at a corresponding column location as shown in the graph in Figure 8. For example, the green color channel value 604 and corresponding red color channel value 606 on the graph shown in Figure 8 specify sample point 608 on the graph shown in Figure 9.

2. Please **replace** paragraph **[0045]** with the following amended paragraph:

In one embodiment (hereinafter referred to as "Embodiment A"), these equations may be rewritten in terms of easier-to-estimate foreground and background constant parameters "a_c" and [["b_c"]] <u>"h_c"</u> (with color channels C, i.e., R, G, B), local samples R(y,x), G(y,x), and B(y,x), and the function D(y,x) as follows:

3. Please **replace** paragraph **[0046]** with the following amended paragraph:

[[$G(y,x) = a_r R(y,x) + b_r D(y,x),$]] <u>$G(y,x) = a_r R(y,x) + h_r D(y,x),$</u>

[[$G(y,x) = a_b B(y,x) + b_b D(y,x).$]] <u>$G(y,x) = a_b B(y,x) + h_b D(y,x).$</u>

4. Please **replace** paragraph **[0047]** with the following amended paragraph:

In another embodiment (hereinafter referred to as "Embodiment B"), it is often the case that the background color D(y,x) is sufficiently slowly varying in a document image that it can be considered constant within a defined window size. In

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Embodiment B, the equations above may be formulated in terms of foreground and background constant parameters "a_c" and [["b'_c"]] $\underline{"h_c'"}$ (with color channels C, i.e., R, G, B) and local samples R(y,x), G(y,x), and B(y,x), as follows:

5. Please **replace** paragraph **[0048]** with the following amended paragraph:

[[$G(y,x) = a_r R(y,x) + b_r'$,]] $\underline{G(y,x) = a_r R(y,x) + h_r'}$,

[[$G(y,x) = a_b B(y,x) + b_b'$.]] $\underline{G(y,x) = a_r R(y,x) + h_r'}$.

6. Please **replace** paragraph **[0049]** with the following amended paragraph:

Embodiment B corresponds to the flow diagram shown in Figure 5, in which a window based approach is used to compute both foreground and background color coefficients "a" and $\underline{"h'"}$ [["b'"]]. In one implementation of Embodiment B set forth above, a 32x32 pixel window that overlaps by 16 pixels on each side is preferred.

7. Please **replace** paragraph **[0053]** with the following amended paragraph:

In this section two methods for estimating the coefficients "a" and [["b" or "b' "]] $\underline{"h" \text{ or } "h'"}$ of the linear transformations of Embodiments A and B defined above in Section 3. The first method, which is defined herein as the "variance method", is preferably used to estimate the coefficients for document images that do not contain many rapidly varying colors. The second method, which is defined herein as the "profiles method", is preferably used to estimate the coefficients for document images with a range of different colors of text.

8. Please **replace** paragraph **[0055]** with the following amended paragraph:

The variance method selects the coefficients to equalize the mean μ_c and variance σ_c^2 of each of the color channels C (e.g., R, G, B) within some window W (e.g., 32 x 32 pixels). That is, the variance method assumes that sets of pixels close together in some window W have similar first-order statistics (i.e., statistics that depend on the sampled value but not the position of the samples of at least two

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color channels within the window W), even though the underlying image may be highly non-stationary and non-smooth, as is typical of text. Given this assumption, a histogram of two color channels in the window W should have similar appearances. Thus, it follows that the coefficients "a" and $\underline{"h'"}$ [["b' "]] of the linear transformations of Embodiment B under the variance method can be computed at step 504 in Figure 5 as follows:

9. Please **replace** paragraph **[0056]** with the following amended paragraph:

$$a_r = \sqrt{\frac{\sigma_G^2}{\sigma_R^2}},$$

$$a_b = \sqrt{\frac{\sigma_G^2}{\sigma_B^2}},$$

$$[[b'_r = \mu_G - a_r \mu_R,]] \; \underline{h_r' = \mu_G - a_r \mu_R},$$

$$[[b'_b = \mu_G - a_b \mu_B.]] \; \underline{h_b' = \mu_G - a_b \mu_B}.$$

10. Please **replace** paragraph **[0059]** with the following amended paragraph:

It will also be appreciated by those skilled in the art that the variance method can be similarly used to compute the coefficients "a" and [["b"]] $\underline{"h"}$ for Embodiment A by normalizing the observed colors with the estimated background color. That is, computing:

11. Please **replace** paragraph **[0084]** with the following amended paragraph:

Once the coefficients "a" and "h" or "a" and "h' " [["b" or "a" and "b' "]] in either

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color channels within the window W), even though the underlying image may be highly non-stationary and non-smooth, as is typical of text. Given this assumption, a histogram of two color channels in the window W should have similar appearances. Thus, it follows that the coefficients "a" and "h'_" [["b' "]] of the linear transformations of Embodiment B under the variance method can be computed at step 504 in Figure 5 as follows:

9. Please **replace** paragraph **[0056]** with the following amended paragraph:

$$a_r = \sqrt{\frac{\sigma_G^2}{\sigma_R^2}},$$

$$a_b = \sqrt{\frac{\sigma_G^2}{\sigma_B^2}},$$

$$[[b'_r = \mu_G - a_r\mu_R,]] \ \underline{h_r' = \mu_G - a_r\mu_R},$$

$$[[b'_b = \mu_G - a_b\mu_B.]] \ \underline{h_b' = \mu_G - a_b\mu_B.}$$

10. Please **replace** paragraph **[0059]** with the following amended paragraph:

It will also be appreciated by those skilled in the art that the variance method can be similarly used to compute the coefficients "a" and [["b"]] "h_" for Embodiment A by normalizing the observed colors with the estimated background color. That is, computing:

11. Please **replace** paragraph **[0084]** with the following amended paragraph:

Once the coefficients "a" and "h" or "a" and "h'_" [["b" or "a" and "b' "]] in either Embodiment A or B, respectively, have been determined, the green channel of the image is obtained by applying the linear transformations set forth above. If a full color image is desired, missing red (blue) pixels may be determined at a sampled green or blue (red) pixel analogously. For a system operating using Embodiment A, the transformation for determining missing red pixels given green and blue pixels is as follows:

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12. Please **replace** paragraph **[0085]** with the following amended paragraph:

$[[R(y,x) = (G(y,x) - b_r D(y,x))/a_r,]]$ $\underline{R(y,x) = (G(y,x) - h_r D(y,x))/a_r,}$

$[[R(y,x) = (a_b B(y,x) + (b_b - b_r)D(y,x))/a_r.]]$ $\underline{R(y,x) = (a_b B(y,x) + (h_b - h_r)D(y,x))/a_r.}$

13. Please **replace** paragraph **[0087]** with the following amended paragraph:

$[[R(y,x) = (G(y,x) - b_r')/a_r,]]$ $\underline{R(y,x) = (G(y,x) - h_r')/a_r,}$

$[[R(y,x) = (a_b B(y,x) + b_b' - b_r')/a_r.]]$ $\underline{R(y,x) = (a_b B(y,x) + h_b' - h_r')/a_r.}$

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